

WHAT IS CLAIMED IS:

- 1 1. A method of forming a polyurethane skin for an interior part
2 of a vehicle, comprising:
3 providing an air assisted spray nozzle capable of delivering an
4 atomizing air stream;
5 heating an in-mold coating composition to a temperature above
6 ambient temperature to create a heated in-mold coating composition;
7 spraying the heated in-mold coating composition towards a forming
8 surface with the air assisted spray nozzle to create an in-mold coating layer; and
9 applying a layer of polyurethane over the in-mold coating layer to
10 form the polyurethane skin.
- 1 2. The method of claim 1 wherein the step of heating the in-mold
2 coating composition is performed by heating the atomizing air before the atomizing
3 air is provided to the spray nozzle.
- 1 3. The method of claim 2 wherein the atomizing air stream is
2 heated to a temperature of between 100°F and 200°F.
- 1 4. The method of claim 2 wherein the atomizing air stream is
2 heated to a temperature of between 120°F and 160°F.
- 1 5. The method of claim 1 wherein the step of applying the layer
2 of polyurethane is performed by spraying a layer of aromatic polyurethane over the
3 in-mold coating layer after a flash cycle.
- 1 6. The method of claim 5 wherein the step of heating the in-mold
2 coating composition is performed on the in-mold coating composition prior to entry
3 of the in-mold coating composition into the spray nozzle, and wherein the in-mold
4 coating is heated to a temperature of between 100°F and 180°F.

1 7. A system for manufacturing a polyurethane skin for an interior
2 part of a vehicle, comprising:
3 an air compressor for providing a compressed air to an air assisted
4 spray nozzle having an atomizing air stream;
5 an air heater for heating the compressed air to a temperature above
6 ambient temperature to provide heated atomizing air;
7 an air assisted spray nozzle using the heated atomizing air for
8 spraying an in-mold coating composition layer toward a forming surface of a die;
9 and
10 a spray applicator for applying a layer of polyurethane over the in-
11 mold coating layer to form the polyurethane skin.

1 8. The system of claim 7 wherein the air heater heats the
2 atomizing air stream to a temperature of between 100°F and 200°F.

1 9. The system of claim 7 wherein the air heater heats the
2 atomizing air stream to a temperature of between 120°F and 160°F.

1 10. The system of claim 7 wherein the air heater heats the
2 atomizing air to evaporate a solvent of the in-mold coating.

1 11. The system of claim 7 wherein the spray applicator for
2 applying a layer of polyurethane over the in-mold coating layer applies an aromatic
3 polyurethane after a flash cycle.

1 12. The system of claim 11 wherein the flash cycle is 20% shorter
2 than a flash cycle for an in-mold coating composition applied without heating the
3 atomization air.

1 13. An in-mold coating composition spray system, comprising:
2 a drum containing a supply of in-mold coating composition that is
3 connected to a fluid circuit;

4 a pump for pumping the in-mold coating composition from the drum
5 and through the fluid circuit;
6 a spray gun connected to the fluid circuit that receives the in-mold
7 coating composition from the pump;
8 an air compressor for providing compressed air through an air line
9 to the spray gun to atomize the in-mold coating composition and direct the in-mold
10 coating composition in a pattern; and
11 a heater operative to heat the compressed air in the airline before the
12 compressed air is provided to the spray gun.

1 14. The in-mold coating composition spray system of claim 13
2 wherein the compressed air is used to atomize the in-mold coating and also to direct
3 the spray in a fan-shaped spray pattern.

1 15. The in-mold coating composition spray system of claim 13
2 further comprising a color manifold station connected to the fluid circuit wherein the
3 in-mold coating composition is selected from a group of different color in-mold
4 coatings.

1 16. The in-mold coating composition spray system of claim 13
2 further comprising an air piloted pressure regulator in the fluid circuit immediately
3 up stream from the spray gun.